BELLCOMM, INC.
955 L'ENFANT PLAZA NORTH, S.W. WASHINGTON, D. C. 20024

SUBJECT: LC-34 and LC-37 Deactivation
Case 620

DATE: November 29, 1968

FROM: A. W. Starkey

ABSTRACT

No further Apollo Saturn IB launches are planned from LC-34 and LC-37. There is no operational requirement for LC-34 and LC-37 before about mid-1971 when it is planned that they will be required for AAP-1/2.

KSC has done much planning for the inactivation of LC-34 and LC-37 in the most economical manner, and for the maintainance of the complexes in the down mode. In accordance with these plans and established ground rules, essentially all of the above ground GSE has been removed from LC-34 and about 90 percent of it from LC-37. The removed equipment is being used elsewhere for Apollo or is placed in environmentally controlled storage awaiting assignment to AAP or other disposition.

The reactivation of LC-34 and LC-37 for AAP-1/2 will be a costly project and can be expected to require as much as a year from the go-ahead until the complexes are ready for the vehicles to be erected.

Close coordination between Apollo Program Office and AAP personnel at all levels is necessary to minimize the GSE that may be disposed of which may later be required for AAP and to minimize the cost of reactivation of the complexes.

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TSS 11085

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MEMORANDUM FOR FILE

INTRODUCTION

Apollo 5 launched from LC-37 on January 22, 1968, and Apollo 7 launched from LC-34 on October 11, 1968, marked conclusion of the Saturn IB Apollo Program. Thus there is no operational requirement for LC-34 and LC-37 until about mid-1971 when AAP-1 and AAP-2 are presently planned to be erected for launches not earlier than October 1971. The natural environment at the complexes is such that inactive GSE cannot be economically maintained in the open atmosphere. Therefore, the most economical inactivation of LC-34 and LC-37 and reactivation in the AAP-1 and AAP-2 configurations, respectively, some three years hence presents a significant problem.

The MSF has published guidelines to the centers on the LC-34 and LC-37 inactivation that specify that the Apollo Program will have the management responsibility of the complexes through December 31, 1968, with the Apollo Applications Program (AAP) assuming management responsibility January 1, 1969. The Apollo Program will have budgetry responsibility until June 30, 1969.

DOWN MODE PLANNING

KSC has done much planning for the inactivation LC-34 and LC-37 in the most economical manner, and for the maintenance of the complexes in the down mode. As a result of this planning, KSC developed a Maintenance Policy, Planning and Implementation for LC-34/37 in the down mode (Appendix A). A set of Ground Rules for the Disposition of Spacecraft GSE (Appendix B) were established by KSC and agreed to by MSC in a meeting on November 19, 1968.

STATUS OF LC-34/37

Working under these ground rules, Grumman has removed essentially all the above ground GSE from LC-37, NAR has removed approximately 90 percent of the above ground GSE from LC-34 thus far and this effort is continuing. GSE in environmentally controlled space such as the blockhouses and AGCS building is being left in place provided it is not needed

elsewhere for Apollo, such as LC-39. NAR and Grumman have prepared lists of the GSE on the complexes and recommended disposition of each item. The GSE removed from the complexes is classified as follows:

a. Active - meaning it is to be used for Apollo.

b. Contingency - meaning it is held for Apollo backup.

c. Excess - meaning it will be circularized to AAP first and, if not picked up, it will be processed in accordance with established disposal procedures.

The excess items are being moved to environmentally controlled storage awaiting disposition. While in storage, it will be protected and maintained in accordance with preventive maintenance work orders provided by the development center.

CONDITION OF LC-34/37 AFTER INACTIVATION

After the removal of the GSE, LC-34 and LC-37 above ground will consist essentially of the structures (blockhouse, service structure, launch pedestal and umbilical tower). Even though the pipe lines will be purged and coated on the outside, some pinholing is expected and their condition three years hence is questionable. It is expected that the cabling will lose much of its conductor isolation. Checks indicate that the cables have deteriorated to some extent since installation; however, the rate of this deterioration is not known.

REACTIVATION

The reactivation of LC-34 and LC-37 for launch of AAP-1/2 will require a major effort on the part of all centers involved in AAP. The deferred maintenance on the structures will have to be performed. All piping and cables will have to be checked and many will probably have to be replaced. The ICD's and IRN's on the structure to accommodate AAP flight hardware will have to be worked. The GSE that was removed will have to be inspected and repaired as necessary and necessary mod kits installed. The repaired GSE, the new items to replace the GSE that was removed and used elsewhere, and the GSE peculair to the AAP flight hardware will have to be installed. The facility repair and GSE installation and checkout will be followed by a facility checkout. This activation will be costly and can be expected to require as much as one year from the go-ahead until the complexes are ready for vehicle erection.

Close coordination between the Apollo Program personnel and Apollo Applications Program personnel at all levels is necessary to minimize the GSE that may be disposed of which may be later required for AAP and to minimize the cost of reactivation of the complexes.

2032-AWS-lmc

A. W. Starkey

Attachments
Appendixes A and B

APPENDIX A

KSC MAINTENANCE POLICY, PLANNING AND IMPLEMENTATION FOR LC 34/37 IN THE DOWN MODE

I. POLICY

A. All systems and equipment not required to maintain the complexes will be deactivated and preserved in place or removed to suitable storage. Operating systems and equipment will be held to an absolute minimum.

B. Deactivated systems and equipment will be preserved at a level that requires a minimum maintenance effort.

C. Total control shall be assumed by a single operating organization.

II. PLANNING

A. Determine systems and equipment which must remain either completely or partially operational. If partial, what increment and how will it be separated from the preserved increment. Only systems, equipment and facilities required for maintaining operational and preserved material, safety, health and welfare of personnel, fire protection and security should be operational.

B. Determine systems, equipment and facilities which should be preserved for a minimum of one year.

Considerations:

1. When outstanding mods are to be installed; prior to preservation or on reactivation.

2. What level of preservation should be accomplished.

3. What priority of preservation - inspect and determine.

4. What maintenance is to be accomplished prior to preserving.

5. Procedure for deactivating, preserving and storing.

C. MAINTENANCE

Prepare the maintenance plan for the periods of deactivation and reactivation.

D. GOVERNMENT FURNISH PROPERTY CONTROL

Outline contractual property responsibilities.

III. IMPLEMENTATION

A. Establish GFP Control

1. Designate Property Administrator

2. Designate Complexes Caretaker

3. Establish and Enforce Property Controls

a. Property and Supply Operations & Records will be maintained in accordance with KMI's 4000-4999 Property & Supply and KHB's

b. Cannibalization Control Reference - KSC APD #19 and KSC LOD #18

c. Records for property moved from normal installation for preservation and storage

d. Design and attach an identification tag for each item moved from its normal location:

Note: Tag should have nomenclature, part number, vendor, drawing number, system and location. Also, other information that would insure its positive identification and return to its proper location.

4. Excesses (Obsolete to the Complex) - Equipment spares and other material determined excess will be reported to the Contract Technical Manager for disposition instructions.

5. Standard Spare Parts and Bulk Material - Items not required to maintain the complexes are to be reported to IS-LOG for disposition.

B. OPERATIONS

1. Establish and maintain equipment records

2. Maintain configuration control

3. Provide for R & QA

C. MAINTENANCE

1. Establish and maintain Preventive Maintenance Schedules and Procedures for all material

   a. Operational Equipment will be maintained in a mode to insure safe operation.

   b. Deactivated material will be preserved only for the level of storage.

   c. Preserved material will have minimum maintainance.

2. Corrosion, rust and minor deficiencies found during PM operations which are not urgent may be scheduled and corrected in a routine manner.

3. Serious deficiencies which could cause expensive repairs must be repaired on a priority basis.

APPENDIX B

GROUND RULES FOR DISPOSITION OF SPACECRAFT GSE

1. Pull all end items or parts of end items in all open areas and above ground stations which are subject to damage by dust intrusion from anticipated blasting and weather damage

2. Pull all end items in above ground stations which require special environmental control for preservation except as already provided by existing GN_2 pad pressure and environmental purge systems.

3. Retain all cables connected at both ends. (Terminal will be sealed with RT-11)

4. Remove all flex hoses except as required to provide continuity for hard line GN_2 pad pressure protection. (trench to tower)

5. Maintain or provide external corrosion protection for all exposed hard lines including stainless steel hard lines.

6. Maintain environmental purge on all GAEC/NR and NASA S/C electrical terminal boxes. Seal all boxes to minimize GN_2 requirements and control illegal entry.

7. Retain sufficient documentation to define all requirements to identify the configuration which supported AS-204 and AS-205 launch.

8. Maintain configuration documentation on all GSE removed or retained.

9. Implement channels for the LC-34/37 resident contractors to perform maintenance and preservation as defined by the S/C contractors maintenance plans as approved by NASA for remaining MSC GSE. Include channels for transfer of spare parts required for proper maintenance.

10. Implement resident contractor requirements to preserve and maintain all NASA S/C hard lines, cabling and terminal distributors.

11. LC-34/37 will no longer be required for the Apollo Program; thus, no six month turnaround will be considered.

12. LC-34/37 GSE, categorized as excess to the Apollo Program, will not be dispositioned without Apollo Applications concurrence.

13. No mod kits will be installed on GSE in storage.

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